

Interdisciplinary Space Geodesy: Links with the Earth Sciences

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The sphere of influence of space geodesy is ever enlarging, with impressive achievements in the last few decades in many diverse areas (such as geodynamics, planetary and atmospheric sciences, oceanography, tectonics, and ice studies). Earth system studies have made major advances with the advent of accurate space geodetic techniques with high temporal resolution and the increasing availability of complementary geophysical data. Examples include positioning at the millimeter level, enabling determination of crustal deformation and strain with unprecedented accuracy at high time resolution; water vapor monitoring via GPS; and improved gravity modeling and orbit determination, permitting an unparalleled view of the 1997-1998 ENSO event. The new millennium holds even more promise, with many planned developments, such as GOCE, GRACE, and ICESAT missions, densification of GPS networks, and the development of new technologies. This paper will highlight recent geodetic advances and their interdisciplinary impact with a vision towards the future.